

PERSONAL INFORMATION Filippo Bianchini

Current Position Phd Student in Engineering in Computer Science

EDUCATION AND TRAINING

2025 Visiting PhD

OneTreck SAS - University of Grenoble Alpes, Grenoble, France

Activities During my research activity at OneTreck SAS in collaboration with the University of Grenoble Alpes (Grenoble, France), I contributed to the development of an open-source LLM-based system designed for deployment on edge computing devices in clinical and healthcare environments. The goal of the project was to enable real-time analysis and decision support for patient management by leveraging local processing capabilities. My work focused on integrating Retrieval-Augmented Generation (RAG) techniques and Knowledge Graphs (KGs) to ensure context-aware, accurate, and explainable responses in clinical use cases. The system was tailored to operate under constraints typical of edge devices, balancing model performance with computational efficiency to support sensitive medical scenarios directly at the point of care.

2023–Current Ph.D. in Engineering in Computer Science

Second Year

Sapienza University of Rome, Rome, Italy

Research Interests My research, situated at the intersection of industrial and computer science, focuses on developing AI-based frameworks to enhance and optimize tasks and operations across various domains, particularly in manufacturing. Furthermore, it analyzes the impact of artificial intelligence within large organizational contexts to better understand how to adopt new technologies, such as AI, more effectively. The main topics addressed include Large Language Models (LLMs), Knowledge Graphs (KGs), Retrieval Augmented Generation (RAG), and Prompt Engineering.

2020–2023 Master's Degree in Industrial and Management Engineering - *Business Intelligence and Analytics* (BIA)

110, with honours

Sapienza University of Rome, Rome, Italy

Thesis Giustizia Agile - Metodologie e Tecnologie per il miglioramento dell'Ufficio Per il Processo.

My master's thesis, which was experimental in nature, focused on the computational application of a methodology aimed at analyzing, reproducing, simulating, and optimizing the assistance request process of the Office for Informatics and Statistics (UIS) at the Rome Criminal Court. This was achieved by simultaneously leveraging the principles of *Business Process Management* (BPM) and *Process Mining* (PM).

2016–2020 Bachelor's degree in Industrial and Management Engineering

Sapienza University of Rome, Rome, Italy

TEACHING ACTIVITIES

A.A. 2024/25 University Professor

University of Tuscia

Laboratorio di competenze digitali: data analytics con R, 4CFU, Professor for the *Laboratorio di competenze digitali: data analytics con R* course, offered in the first semester of the Master's program in Business Economics at University of Tuscia of Viterbo, Italy.

A.A. 2024/25 University Teaching Assistant

Sapienza University of Rome

Introduzione alla Programmazione, Tutor for the *Introduzione alla Programmazione* course, taught by Professor Marco Schaerf, offered in the first semester of the Bachelor's program in Computer Engineering at Sapienza University of Rome, Italy. I was awarded a scholarship to serve as a tutor for this course.

- A.A. 2023/24 **Universitary Assistant** Sapienza University of Rome
Sistemi Informativi Aziendali (SIA), Tutor for the *Sistemi Informativi Aziendali* course taught by Professor Massimo Mecella, offered in the second semester of the Master's program in Management Engineering at Sapienza University of Rome, Italy.
- A.A. 2023/24 **Computer Science Professor** ITS Lazio Digital Academy
Basic Computer Science, Basic Computer Science Course for ITS Academy Lazio Digital, consisting of 40 hours delivered over 3 months. The course was structured to provide a comprehensive overview, both theoretical and practical, of the Python programming language. ITS Academy Lazio Digital, Rome, Italy.
- A.A. 2022/23 **Computer Science Professor** Gaetano De Sanctis Institute
Introduction to Python Programming, A 10-hour course funded as a PON project, delivered in 5 sessions of 2 hours each, aimed at introducing high school students to the world of Python programming. G. De Sanctis Scientific High School, Rome, Italy.
- 2017–2023 **Scientific Tutor** Rome
Calculus 1, Fundamentals of Computer Science, Physics, Statistics, From 2017 to 2023, I gained experience as a tutor, providing academic support to university students. My key competencies range from teaching to developing solid study methods in fundamental subjects such as Calculus 1, Physics 1, Statistics, and Fundamentals of Computer Science. Rome, Italy.
Mathematics, Physics, Chemistry, and Computer Science, From 2016 to 2023, I was actively involved in tutoring high school students, often with certified learning disabilities (DSA), with a particular focus on scientific subjects such as mathematics, physics, chemistry, and computer science. Rome, Italy.
Mathematics, Science, Geometry, History, Geography, Italian, English, and French, My tutoring journey began in 2015, providing support to middle school students with learning disabilities (DSA). I assisted in a wide range of subjects, including mathematics, science, geometry, history, geography, Italian, English, and French. Rome, Italy.

MAIN RESEARCH ACTIVITIES

- 2024 – 2025 **SAFE -CITIES**
 I have been involved in european SAFE-CITIES project (<https://safe-cities.eu/>). I contributed to the this project, focused on enhancing urban safety and resilience through innovative digital solutions. My role involved developing a specialized LLM-based chatbot capable of assisting with security-related queries and simulating risk scenarios in smart city environments. I also participated in the project's final event in Gorizia, where I demonstrated the chatbot's capabilities as part of the closing showcase.
- 2024 – current **MICS - SPOKE 8**
 I am involved in Spoke 8 (<https://www.mics.tech/spokes/spoke-8/>) of the MICS project, as it funds my research fellowship. Spoke 8 focuses on developing a new concept of sustainable and resilient digital factories, where artificial intelligence, digital technologies, and collaborative robotics work together to create efficient human-machine systems. My role within Spoke 8 is to contribute to these research goals through the development of AI-based solutions. The main activity focuses on developing a pipeline that addresses complex linguistic tasks—those requiring domain-specific knowledge—by leveraging Large Language Models (LLMs), Knowledge Graphs (KGs), and Retrieval-Augmented Generation (RAG). As a secondary activity, I am involved in developing AI-based solutions that use LLMs for an initial phase of Information Extraction, combined with AI-based computer vision models, to reduce defect detection times in X-ray images of motherboards intended for installation in fighter jets and helicopters. The goal is to provide a support tool for specialized technicians in the analysis of motherboard defects.
- 2024 – current **AnTeA**

I have been actively involved in the development of the *Anagrafe Territoriale dinamica delle Acque potabili (AnTeA)*¹ project as a researcher and developer. The project aims to create a digital platform for acquiring, managing, and analyzing data on drinking water in Italy, in compliance with the D.Lgs 18/2023, which implements the EU Directive 2020/2184. AnTeA's main goal is to ensure access to information about water quality from its source to the point of use. The key objectives of the project include ensuring the acquisition and analysis of water quality data for human consumption, facilitating data sharing among environmental and health authorities, and providing public access to this information. Additionally, the platform will support information exchange with national and international institutions, including the European Commission and the World Health Organization. My work on the AnTeA project has primarily focused on managing the project's progress and developing algorithms to automate several standard procedures.

2022 – 2023 Giustizia Agile - per una giustizia giusta

Project funded by the Ministry of Justice with PNRR funds aimed at identifying, analyzing, and improving the organization and structure of the *Ufficio Per il Processo (UPP)* from an IT and informational perspective. The main activities undertaken are as follows:

- Analysis and re-engineering of the assistance request process at the Office for Informatics and Statistics of the Criminal Court of Rome.
- Analysis of the Civil Court of Rome's database with query optimization for data extraction.
- Development of a writing assistant based on a fine-tuned Large Language Model.
- Development of Excel macros in Visual Basic (VBA) to automate organizational procedures within judicial offices.

CONFERENCE AND EVENTS

Jun 2025	Conference	Cyprus
AIAI2025: <i>International Conference on Artificial Intelligence Applications & Innovations</i> , Filippo Bianchini, Marco Calamo, Matteo Marinacci, Massimo Mecella and Jacopo Rossi. Participation to International Conference on Artificial Intelligence Applications & Innovations and presentation of the paper <i>Automating Industrial Quality Control: A Multimodal LLM and RAG Framework for Anomaly Detection</i>		
Jun 2025	Conference	Amman
ECIS2025: <i>European Conference on Information Systems</i> , Filippo Bianchini, Alessio Maria Braccini, Francesca De Luzi, Mattia Macrì, Massimo Mecella and Rosa Anna Ruggiero. Participation to European Conference on Information Systems (ECIS) and presentation of the paper <i>Factors Driving Chatbot Adoption in the Legal Domain: a Fuzzy-set Qualitative Comparative Analysis in the Italian Domain</i>		
Jun 2025	Conference	Ischia
SEBD2025: <i>33rd Symposium On Advanced Database Systems</i> , Filippo Bianchini, Marco Calamo, Francesca De Luzi, Mattia Macrì, Massimo Mecella. Presentation of the paper: <i>MARTIALIS: An Open Framework for Knowledge Graphs-based Retrieval Augmented Generation</i> .		
Jun 2025	Conference	Crete
SummerSCO2025: <i>19th Symposium and Summer School On Service-Oriented Computing - SummerSOC2024</i> , Filippo Bianchini, Willem-Jan Van de Heuvel, Damian Tamburri, Matteo Marinacci, Jacopo Rossi, Massimo Mecella. Presentation of the paper: <i>Talk Smart, Stay Safe: Intelligent Conversational Agents for Urban Security</i> .		
Mar 2025	Demo	Gorizia

Final event and demonstration for european Safe-Cities project, Filippo Bianchini, Matteo Marinacci. Participation to the final demo event in Gorizia for the closing of the european SAFE-CITIES project. During this event we presented and showed our llm-based chatbot for safe-cities knowledge management and simulation.

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| Feb 2025 | Event | Bologna |
| | <i>MICS National Event</i> , Filippo Bianchini. Participation in the national event of the MICS PNRR project, held in Bologna. The event provided a platform for sharing research progress and fostering collaborations within the Italian AI research community. | |
| Nov 2024 | Conference | Prague |
| | <i>ISM2024; International Conference on Industry 4.0 and Smart Manufacturing</i> , Filippo Bianchini, Marco Calamo, Francesca De Luzi, Mattia Macrì, Matteo Marinacci, Jerin George Mathew, Flavia Monti, Jacopo Rossi, Francesco Leotta, Massimo Mecella. Participation to International Doctoral Workshop (IDW) and presentation of the paper <i>SAMBA: A reference framework for Human-in-the-Loop in adaptive Smart Manufacturing</i> | |
| Oct 2024 | Conference | Piacenza |
| | <i>ItAIS2024: XXI Conference of the Italian Chapter of AIS Growing in a digital and sustainable society</i> , Filippo Bianchini, Alessio Maria Braccini, Francesca De Luzi, Mattia Macrì, Massimo Mecella. Participation to Junior Faculty and Doctoral Consortium (JFDC) and presentation of the paper: <i>Exploring Chatbot Adoption in the Italian Legal Domain: a Fuzzy-set Qualitative Comparative Analysis</i> . | |
| Jul 2024 | Seminar | Rome |
| | <i>Intelligenza Artificiale: scenari di elaborazione dati - AI moderna: una panoramica su LLM e Prompt Engineering</i> , Filippo Bianchini, Massimo Mecella. Seminar conducted in Italian for architecture PhD students on modern AI and its applications in the field of architecture. | |
| Jun 2024 | Conference | Crete |
| | <i>SummerSCO2024: 18th Symposium and Summer School On Service-Oriented Computing - SummerSOC2024</i> , Filippo Bianchini, Marco Calamo, Francesca De Luzi, Mattia Macrì, Massimo Mecella. Participation to SummerSOC2024 and presentation of the paper: <i>A Service-Based Pipeline for Complex Linguistic Tasks Adopting LLMs and Knowledge Graphs</i> . | |
| Jun 2024 | Poster session | Crete |
| | <i>SummerSCO2024: 18th Symposium and Summer School On Service-Oriented Computing - SummerSOC2024</i> , Filippo Bianchini, Marco Calamo, Francesca De Luzi, Mattia Macrì, Massimo Mecella. Participation to SummerSOC2024 and presentation of the paper: <i>A Service-Based Pipeline for Complex Linguistic Tasks Adopting LLMs and Knowledge Graphs</i> . | |
| Feb 2024 | Seminar | Viterbo |
| | <i>Lavorare con l'AI generativa: una sessione pratica</i> , Filippo Bianchini, Massimo Mecella, Francesca De Luzi, Mattia Macrì, Alessio Maria Braccini. Seminar conducted in Italian for PhD students in legal sciences at the University of Tuscia on Artificial Intelligence, Prompt Engineering, and in-depth exploration of ChatGPT usage. University of Tuscia, Viterbo, Italy. | |
| Sept 2023 | Workshop | Turin |
| | <i>Enhancing e-Justice: Assessing the effectiveness of specialized LLMs' applications with Cicero</i> , Filippo Bianchini. European Conference on Machine Learning and Principles and Practice of Knowledge Discovery - ECML PKDD 2023: ML, Law and Turin, Italy | |

REVIEWS

- Jul 2025 **Review** ISM2025
Review for ISM2025, Review of 1 papers for the conference International Conference on Information Systems - Reject.
- Jun 2025 **Review** ICIS2025
Review for ICIS2025, Review of 1 papers for the conference International Conference on Information Systems - Accept with minor revisions.
- Jun 2025 **Review** MTAP
Review for MTAP, Review of 1 papers for the Journal Multimedia Tools and Applications - Reject.
- Feb 2025 **Review** AIAI2025
Review for AIAI2025, Review of 1 papers for the conference Innovative Application for Artificial Intelligence - Reject .
- Jul 2024 **Review** ISM2024
Review for ISM2024, Review of 1 papers for the conference International Conference on Information Systems - Weak Accept.

ADDITIONAL INFORMATION

Mother tongue Italian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
[Common European Framework of Reference for Languages](#)

PUBLICATIONS

- [1] Edoardo Bianchini, **Filippo Bianchini**, Marco Calamo, Francesca De Luzi, Mattia Macrì, and Massimo Mecella. "MARTIALIS: An Open Framework for Knowledge Graphs-based Retrieval Augmented Generation". In: *33rd Symposium on Advanced Database System (SEBD)*. CEUR Workshop Proceedings. 2025.
- [2] **Filippo Bianchini**, Alessio Braccini Marco, Francesca De Luzi, Mattia Macrì, Massimo Mecella, and Ruggiero Rosa. "Factors Driving Chatbot Adoption in the Legal Domain: a Fuzzy-set Qualitative Comparative Analysis in the Italian Domain". In: *33rd European Conference on Information Systems (ECIS)*. 2025.
- [3] **Filippo Bianchini**, Marco Calamo, Jacopo Rossi, Matteo Marinacci, and Massimo Mecella. "Automating Industrial Quality Control: A Multimodal LLM and RAG Framework for Anomaly Detection". In: *IFIP International Conference on Artificial Intelligence Applications and Innovations*. Springer, 2025.
- [4] **Filippo Bianchini**, Jacopo Rossi, Matteo Marinacci, Willem-Jan Van de Heuvel, Damian Tamburri, and Massimo Mecella. "Talk Smart, Stay Safe: Intelligent Conversational Agents for Urban Security". In: *19th Symposium and Summer School On Service-Oriented Computing*. Springer, 2025.

- [5] **Filippo Bianchini**, Alessio Braccini Marco, Francesca De Luzi, Mattia Macrì, Massimo Mecella, and Ruggiero Rosa. “Exploring Chatbot Adoption in the Italian Legal Do-main: a Fuzzy-set Qualitative Comparative Analysis”. In: *XXI Conference of the Italian Chapter of AIS (ItAIS) - Growing in a digital and sustainable society*. 2024.
- [6] **Filippo Bianchini**, Marco Calamo, Francesca De Luzi, Mattia Macrì, Matteo Marinacci, Jerin George Mathew, Flavia Monti, Jacopo Rossi, Francesco Leotta, and Massimo Mecella. “SAMBA: A reference framework for Human-in-the-Loop in adaptive Smart Manufacturing”. In: *6th International Conference on Industry 4.0 and Smart Manufacturing (ISM) 2024*. 2024.
- [7] **Filippo Bianchini**, Marco Calamo, Francesca De Luzi, Mattia Macrì, and Massimo Mecella. “A service-based pipeline for complex linguistic tasks adopting LLMs and Knowledge Graphs”. In: *18th Symposium and Summer School On Service-Oriented Computing (SummerSOC)*. Springer. 2024.
- [8] **Filippo Bianchini**, Marco Calamo, Francesca De Luzi, Mattia Macrì, and Massimo Mecella. “Enhancing Complex Linguistic Tasks Resolution Through Fine-Tuning LLMs, RAG and Knowledge Graphs (Short Paper)”. In: *International Conference on Advanced Information Systems Engineering*. Springer. 2024, pp. 147–155.